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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/666,398	09/20/2000	Paul A. P. Kaufholz	PHN 17-643	8968

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EXAMINER	
STORM, DONALD L	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/666,398 Examiner Donald L. Storm	Applicant(s) KAUFHOLZ, PAUL A. P. Art Unit 2654
<i>-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --</i>		
Period for Reply		
A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.		
<ul style="list-style-type: none"> - Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication. - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely. - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication. - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). - Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b). 		
Status		
1) <input checked="" type="checkbox"/> Responsive to communication(s) filed on <u>September 20, 2000 thru March 5, 2001</u> .		
2a) <input type="checkbox"/> This action is FINAL. 2b) <input checked="" type="checkbox"/> This action is non-final.		
3) <input type="checkbox"/> Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under <i>Ex parte Quayle</i> , 1935 C.D. 11, 453 O.G. 213.		
Disposition of Claims		
4) <input checked="" type="checkbox"/> Claim(s) <u>1-11</u> is/are pending in the application.		
4a) Of the above claim(s) _____ is/are withdrawn from consideration.		
5) <input type="checkbox"/> Claim(s) _____ is/are allowed.		
6) <input checked="" type="checkbox"/> Claim(s) <u>1-11</u> is/are rejected.		
7) <input type="checkbox"/> Claim(s) _____ is/are objected to.		
8) <input type="checkbox"/> Claim(s) _____ are subject to restriction and/or election requirement.		
Application Papers		
9) <input checked="" type="checkbox"/> The specification is objected to by the Examiner.		
10) <input checked="" type="checkbox"/> The drawing(s) filed on <u>20 September 2000</u> is/are: a) <input checked="" type="checkbox"/> accepted or b) <input type="checkbox"/> objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).		
11) <input type="checkbox"/> The proposed drawing correction filed on _____ is: a) <input type="checkbox"/> approved b) <input type="checkbox"/> disapproved by the Examiner. If approved, corrected drawings are required in reply to this Office action.		
12) <input type="checkbox"/> The oath or declaration is objected to by the Examiner.		
Priority under 35 U.S.C. §§ 119 and 120		
13) <input checked="" type="checkbox"/> Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f). a) <input checked="" type="checkbox"/> All b) <input type="checkbox"/> Some * c) <input type="checkbox"/> None of: 1.) <input checked="" type="checkbox"/> Certified copies of the priority documents have been received. 2.) <input type="checkbox"/> Certified copies of the priority documents have been received in Application No. _____. 3.) <input type="checkbox"/> Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)). * See the attached detailed Office action for a list of the certified copies not received.		
14) <input type="checkbox"/> Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application). a) <input type="checkbox"/> The translation of the foreign language provisional application has been received.		
15) <input type="checkbox"/> Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.		
Attachment(s)		
1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____. 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) <input type="checkbox"/> Other:		

DETAILED ACTION

Information Disclosure Statement

1. With respect to the STR Z4000 data sheet (item AL) and the MC-34067 data sheet (item AM), the information disclosure statement filed September 20, 2000 (paper 5) fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because a complete copy of each article has not been provided. The application file does not have copies of items AL and AM.

The Applicant is advised that the date of submission of any item of information listed in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Specification

2. The title is objected to because it is not sufficiently descriptive of the invention. A new title is required that is clearly indicative of the invention to which the claims are directed. See MPEP § 606.01. The Examiner suggests that the Applicant consider a title including these elements: "Speech Recognition Apparatus, Consumer Electronics System, and Multiple Source Audio Cancellation Module."
3. The abstract is objected to because the phrase "Fig. 1" (line 8) is unconnected to the subject matter and appears to serve no purpose in this abstract.

4. The Examiner notes, without objection, the possibility of informalities in the abstract. It is in the best interests of the patent community that the Applicant be aware of these editorial situations and consider changes during normal review and revision of the abstract:

Numbers in the abstract referring to elements in the drawings lengthen the abstract and the reference is unclear when not accompanied by the appropriate figure. They interfere with its purpose, which is to determine quickly from a cursory inspection the nature and gist of the technical disclosure. The language should be clear and concise. See 37 CFR § 1.72 and MPEP § 608.01(b). The form used in the patent disclosure, such as “module (100)”, “input (110)”, and “inputs (120, 130)” may not be appropriate in the abstract.

5. The Examiner notes, without objection, that page 3 of the specification has explicit reference to the claims by claim number. As the claim numbers related to this subject matter may change by amendment to the claims or by renumbering at the time of allowance, it may develop that reference to the claims by number may refer a claim incorrectly. It is in the best interests of the patent community that the Applicant be aware of these editorial situations and consider changes during normal review and revision of the specification.

Claim Informalities

6. Claim 1, and by dependency claims 2-6, are objected to because some phrases need clarification. Perhaps a word or phrase is missing or misplaced, or perhaps the errors are misspellings.

At line 10, plural noun subject “modules” does not agree in number with the singular verb “is operative”.

7. The form of the claims does not follow Office practice. While there is no set statutory form for claims, the present Office practice is to insist that each claim must be the object of a sentence starting with “I (or we) claim”, “The invention claimed is” (or the equivalent). The Applicant is encouraged to insert a desired introduction before claim 1. If, at the time of allowance, appropriate terminology is not present, it is inserted by the technical staff. See MPEP § 608.01(m).

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Regarding claim 5, the phrase “the audio communication network” lacks antecedent basis in the claim. In view of claims 3, 4, and 5, it appears that claim 5 may be attempting to establish the same functionality as provided by the limitations of claim 9. To further timely prosecution and evaluate prior art, the Examiner has interpreted this claim the same as claim 9.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Eriksson

12. Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Eriksson [US Patent 5,033,082].

Regarding claim 11, Eriksson [at column 2, lines 3-4 and lines 10-11] describes an audio cancellation module comprising:

an audio input for receiving a signal [at column 2, lines 14-15, as summer 64 receives the output of microphone 36];

that is an audio signal from a microphone [at column 1, lines 58-59, as microphone 36 senses speech at location 24];

at least two audio inputs for receiving signals [at column 2, lines 12-13, and at column 2, lines 5-6, as model 56 has input from microphone 20 and model 48 has input from a microphone 22];

that are audio signals from respective audio sources [at column 1, lines 50-51, as microphone 20 senses noise from noise source 14 and microphone 22 senses noise from noise source 18];

that are independent [at column 1, lines 47-49, as zone 12 is subject to noise from source 14 and a second zone 16 spaced from zone 12 is subject to noise from source 18];
the audio cancellation module canceling at least two of the independent audio source signals from the microphone signal [at column 2, lines 46-48, and column 2, lines 5-9, as model 56 canceled noise from noise source 14 and model 48 cancels noise from noise source 18];
to produce a speech signal [at column 2, lines 51-53, as sum to speaker 34 contains speech from person 26].

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Eriksson and Linder

14. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eriksson [US Patent 5,033,082] in view of Linder [International Publication WO 98/01956].

15. Regarding claim 7, Eriksson [at column 1, lines 26-36] describes the consumer electronics system comprising:

at least two audio source apparatuses [at column 1, lines 50-51, as noise source 14 and noise source 18];

an audio cancellation module at column 2, lines 46-48, and column 2, lines 5-9, as model 56 and model 48];

including an audio input for receiving a signal [at column 2, lines 14-15, as summer 64 receives the output of microphone 36];

that is an audio signal from a microphone [at column 1, lines 58-59, as microphone 36 senses speech at location 24];

and including at least two audio inputs for receiving signals [at column 2, lines 12-13, and at column 2, lines 5-6, as model 56 has input from microphone 20 and model 48 has input from a microphone 22];

that are independent audio signals from respective audio source apparatuses [at column 1, lines 47-51, as microphone 20 senses noise from noise source 14 in zone 12 and microphone 22 senses noise from noise source 18 in a second zone 16 spaced from zone 12];

the audio cancellation module canceling at least two of the independent audio source signals from the microphone signal [at column 2, lines 46-48, and column 2, lines 5-9, as model 56 canceled noise from noise source 14 and model 48 cancels noise from noise source 18];

to produce a speech signal [at column 2, lines 51-53, as sum to speaker 34 contains speech from person 26].

Eriksson does not explicitly describe speech recognition. Eriksson [at column 1, lines 26-36], however, describes that canceling the noises enables enjoyment of an entertainment system and communication to and from a vehicle by telephone.

Linder [at page 1, lines 8-23] also describes canceling vehicle noise for better telephone communication, comprising:

an audio cancellation module [at page 6, lines 22-25, as a microprocessor that forms a processed signal with substantial information and negligible noise];

including an audio input for receiving an audio signal from a microphone [at page 3, line 29-page 4, line 1, as and information signals interface for receiving a voice signal, such as a microphone];

and including an audio input for receiving a an audio signal from an audio source apparatus [at page 4, lines 19-23, as an input interface for receiving an audible signal which is emitted by a noise generator, such as a second microphone];

the audio cancellation module being operative to produce a speech signal by canceling the audio source signal from the microphone signal [at page 6, line 22-page 7, line 2, as a microprocessor that forms a processed signal by canceling the noise component of the signal while substantially maintaining the voice signal received by the microphone]; and

a speech recognizer [at page 10, lines 5-9, as a speech recognition circuit];

for recognizing at least part of the speech signal [at page 1, lines 18-20, as recognizing voice commands understood from a user's voice message].

Linder [at page 13, lines 7-11] points out that in systems with multiple noise generators the noise cancellation apparatus and method may be duplicated. By examining the figure in Eriksson, an artisan would realize that duplicating the noise cancellation is what Eriksson has done to deal with multiple noise sources. Accordingly, it would have been obvious to one of ordinary skill in the art of noise cancellation in speech recognition systems at the time of invention to follow Linder's suggestion and incorporate Eriksson's concept of duplicate noise cancellation apparatuses in the presence of Eriksson's two noise sources because that would have

produced a speech signal for Linder's speech recognizer from which the interfering noise from both noise sources had been canceled.

Linder and Eriksson

16. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Linder [International Publication WO 98/01956] in view of Eriksson [US Patent 5,033,082].

17. Regarding claim 1, Linder [at page 1, lines 8-23] describes a speech recognition apparatus that cancels noise for easier command recognition, comprising:

an audio cancellation module [at page 6, lines 22-25, as a microprocessor that forms a processed signal with substantial information and negligible noise];

including an audio input for receiving an audio signal from a microphone [at page 3, line 29-page 4, line 1, as and information signals interface for receiving a voice signal, such as a microphone];

and including an audio input for receiving a an audio signal from an audio source [at page 4, lines 19-23, as an input interface for receiving an audible signal which is emitted by a noise generator];

the audio cancellation module being operative to produce a speech signal by canceling the audio source signal from the microphone signal [at page 6, line 22-page 7, line 2, as a microprocessor that forms a processed signal by canceling the noise component of the signal while substantially maintaining the voice signal received by the microphone]; and a speech recognizer [at page 10, lines 5-9, as a speech recognition circuit];

for recognizing at least part of the speech signal [at page 1, lines 18-20, as recognizing voice commands understood from a user's voice message];

Linder does not explicitly describe canceling two noise sources from the input speech signal in a noisy environment. Linder [at page 1, lines 8-23], however, describes that noise cancellation enables telephone communication in a noisy environment.

Eriksson [at column 1, lines 26-36] also describes that canceling noises enables communication to and from noisy environments by telephone, and describes:

an audio cancellation module [at column 2, lines 46-48, and column 2, lines 5-9, as model 56 and model 48];

including an audio input for receiving a signal [at column 2, lines 14-15, as summer 64 receives the output of microphone 36];

that is an audio signal from a microphone [at column 1, lines 58-59, as microphone 36 senses speech at location 24];

and including an audio input for receiving a signal [at column 2, lines 12-13, and at column 2, lines 5-6, as model 56 has input from microphone 20];

from an audio source [at column 1, lines 47-51, as microphone 20 senses noise from noise source 14 in zone 12];

characterized in that the audio cancellation module includes at least two audio inputs for receiving signals [at column 2, lines 12-13, and at column 2, lines 5-6, as model 56 has input from microphone 20 and model 48 has input from a microphone 22];

that are audio signals from respective independent audio sources [at column 1, lines 47-51, as microphone 20 senses noise from noise source 14 in zone 12 and microphone 22 senses noise from noise source 18 in a second zone 16 spaced from zone 12];

and operative to cancel at least two of the independent audio source signals from the microphone signal [at column 2, lines 46-48, and column 2, lines 5-9, as model 56 canceled noise from noise source 14 and model 48 cancels noise from noise source 18]; to produce a speech signal [at column 2, lines 51-53, as sum to speaker 34 contains speech from person 26].

Linder [at page 13, lines 7-11] points out that in systems with multiple noise generators the noise cancellation apparatus and method may be duplicated. By examining the figure in Eriksson, an artisan would realize that duplicating the noise cancellation is what Eriksson has done to deal with multiple noise sources. Accordingly, it would have been obvious to one of ordinary skill in the art of noise cancellation in speech recognition systems at the time of invention to follow Linder's suggestion and incorporate Eriksson's concept of duplicate noise cancellation apparatuses in the presence of Eriksson's two noise sources because that would have produced a speech signal for Linder's speech recognizer from which the interfering noise from both noise sources had been canceled.

Eriksson and Houser

18. Claims 1-3 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eriksson [US Patent 5,033,082] in view of Houser et al. [US Patent 5,774,859].

19. Regarding claim 7, Eriksson [at column 1, lines 26-36] describes the consumer electronics system comprising:

at least two audio source apparatuses [at column 1, lines 50-51, as noise source 14 and noise source 18];

an audio cancellation module [at column 2, lines 46-48, and column 2, lines 5-9, as model 56 and model 48];

including an audio input for receiving a signal [at column 2, lines 14-15, as summer 64 receives the output of microphone 36];

that is an audio signal from a microphone [at column 1, lines 58-59, as microphone 36 senses speech at location 24];

and including at least two audio inputs for receiving signals [at column 2, lines 12-13, and at column 2, lines 5-6, as model 56 has input from microphone 20 and model 48 has input from a microphone 22];

that are independent audio signals from respective audio source apparatuses [at column 1, lines 47-51, as microphone 20 senses noise from noise source 14 in zone 12 and microphone 22 senses noise from noise source 18 in a second zone 16 spaced from zone 12];

the audio cancellation module canceling at least two of the independent audio source signals from the microphone signal [at column 2, lines 46-48, and column 2, lines 5-9, as model 56 canceled noise from noise source 14 and model 48 cancels noise from noise source 18];

to produce a speech signal [at column 2, lines 51-53, as sum to speaker 34 contains speech from person 26].

Eriksson [at column 1, lines 26-36] describes that canceling the noise is enables enjoyment of an entertainment system and communication to and from the vehicle by telephone. Eriksson, however does not explicitly describe speech recognition.

Houser [at column 17, lines 30-38] also describes a consumer entertainment system that includes a second input for noise cancellation, comprising:

an audio cancellation module [at column 6, lines 40-46, as a front end for noise cancellation];

including an audio input for receiving an audio signal from a microphone [at column 6, lines 35-40, as the transducer for transmitting electrical signals of spoken words from microphone];

and including an audio input for receiving a an audio signal from an audio source apparatus [at column 17, lines 30-32, as a second microphone receives audio from a television];

the audio cancellation module being operative [at column 6, lines 40-46, as a front end for noise cancellation];

to produce a speech signal by canceling the audio source signal from the microphone signal [at column 17, lines 32-36, as the spoken signal with the television audio signal subtracted from the microphone input data]; and

a speech recognizer for recognizing at least part of the speech signal [at column 6, lines 4-6, as which convert spoken audio into text or commands].

By examining the figure in Eriksson, an artisan would realize that Eriksson has duplicated the noise cancellation apparatus to cancel two noise sources. Accordingly, it would have been obvious to one of ordinary skill in the art of noise cancellation in speech recognition systems at the time of invention to incorporate Eriksson's concept of duplicate noise inputs and noise cancellation apparatuses in Houser's front end to deal with two noise sources because that would have provided a cleaner speech signal for Houser's speech recognizer since interfering noises from two independent noise sources could be canceled.

20. Claim 8 is set forth including the limitations of claim 7. Eriksson and Houser describe and make obvious those limitations as indicated there. Houser also describes additional limitations as follows:

a control unit [at column 5, line 62-63, as terminal unit processor];
in response to a spoken instruction of the user is recognized by the speech recognizer [at column 5, line 58-column 6, line 3, as executing commands recognized from spoken command data by the speech recognition algorithm];
for issuing at least one command message to an apparatus in the system [column 5, line 67-column 6, line 3 generating a command for controlling a device];
via a communication network [at column 7, lines 55-58, as a communication link, for example, a network].

21. Claim 1 is set forth with limitations similar to claim 7. Eriksson and Houser describe and make obvious those limitations as indicated there.

22. Claim 2 is set forth including the limitations of claim 1, and with additional limitations similar to limitations set forth in claim 8. Eriksson and Houser describe and make obvious those limitations as indicated there. Houser also describes further additional limitations as follows:
the command message is issued to a further apparatus [at column 7, lines 55-58, as the command is passed to a device].

23. Claim 3 is set forth including the limitations of claims 1-2. Eriksson and Houser describe and make obvious those limitations as indicated there. Houser also describes additional limitations as follows:

the controller is operative to issue the command message according to a remote control messages associated with the further apparatus [at column 14, lines 40-47, as the terminal unit transmits commands to VCR by, for example, IR signals].

24. Claim 6 is set forth including the limitations of claim 1. Eriksson and Houser describe and make obvious those limitations as indicated there. Houser also describes additional limitations as follows:

the speech recognition apparatus includes at least one audio input for receiving an audio signal from an audio source external to the apparatus; the audio signal being received substantially for the purpose of canceling this audio signal from the microphone signal [at column 17, lines 30-32, as the speech input device includes a second microphone which receives the television audio to be subtracted from the microphone input data].

Eriksson and Houser and Allen

25. Claim 4-5 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eriksson [US Patent 5,033,082] in view of Houser et al. [US Patent 5,774,859] and further in view of Allen et al. [US Patent 5,485,515].

26. Claim 9 is set forth including the limitations of claims 7-8. Eriksson and Houser describe and make obvious those limitations as indicated there. Houser [at column 7, line 58] also

describes the network may be a telephone network, Eriksson [at column 1, lines 32-33] describes telephone communications, and Eriksson [see Figure] describes speech and noise at both ends of a communication channel.

However, neither Eriksson nor Houser explicitly describes receiving the cancellation audio signals across a network.

Like Eriksson, Allen [at column 1, lines 22-28] describes that canceling the noises enables communication to and from a vehicle by telephone, and Allen describes:

at least one of the audio signals is received via the communication network from the associated audio source apparatus [at column 4, lines 8-12, as the noise indicative signal of the background noise in the near-end environment is received by the noise compensation system contained within the telephone network].

By examining the figure in Eriksson, an artisan would realize that Eriksson has placed the noise cancellation apparatus in the communication channel between two speakers. In Figure 1, Allen has also placed the noise cancellation apparatus in the communication channel between two speakers. Allen [at column 4, lines 25-28] points out that by including the noise compensation system within the telephone network, the benefits of noise compensation to be obtained with the use of conventional terminal telephone equipment. In view of the similar presentations of Eriksson and Allen, it would have been obvious to one of ordinary skill in the art of noise cancellation at the time of invention to include Allen's concept of receiving the cancellation audio signal across a network for noise cancellation within the communication network connection (that is made obvious by Eriksson and Houser) because that would have provided the benefit of noise cancellation from more than one noise source connected to the network without requiring that specialized equipment be duplicated at each location.

27. Claim 10 is set forth including the limitations of claims 7-9. Eriksson, Houser, and Allen describe and make obvious those limitations as indicated there. Houser also describes additional limitations as follows:

the audio cancellation module is located in an apparatus of the system [at column 6, lines 39-44, as terminal unit includes a front end for noise cancellation];

where the apparatus includes at least one audio input for receiving an audio signal from an audio source apparatus external to the apparatus; the audio signal being received substantially for the purpose of canceling this audio signal from the microphone signal [at column 17, lines 30-32, as the speech input device includes a second microphone which receives the television audio to be subtracted from the microphone input data].

28. Claim 4 is set forth including the limitations of claim 1 and with additional limitations similar to limitations set forth in claim 9. Eriksson, Houser, and Allen describe and make obvious those limitations as indicated there. Houser also describes further additional limitations as follows:

the audio signal is from an audio source external to the speech recognition apparatus [at column 17, lines 30-32, as audio spoken by television voices].

29. Claim 5 is set forth including the limitations of claims 1-3. Claim 5 is further set forth with additional limitations similar to limitations set forth in claim 9, if the Examiner's assumption to correct problems under 35 USC 112, second paragraph are correct. Eriksson, Houser, and Allen describe and make obvious those limitations as indicated there.

Conclusion

30. The following references made of record and not relied upon are considered pertinent to applicant's disclosure:

Chang [US Patent 4,912,767] describes noise cancellation using two microphones, both inputting speech and noise from multiple noise sources, for speech recognition.

Beiele [US Patent 5,309,378] subtracts multiple inputs corresponding to respective multiple independent noise sources from the signal of interest input by its respective microphone.

Gardner [US Patent 5,737,433] communicates multiple inputs corresponding to respective multiple, independent, remote, noise sources for cancellation from the signal of interest input by its respective microphone.

Linder [US Patent 6,072,881] describes the same as International Publication WO 98/01956.

31. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703)872-9314, (for formal communications intended for entry)

Or:

(703)872-9314, (for informal or draft communications, and please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

32. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald L. Storm, of Art Unit 2654, whose telephone number is (703)305-3941. The examiner can normally be reached on weekdays between 8:00 AM and 5:00 PM Eastern Time. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (703)305-4379. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office at telephone number (703)306-0377.

August 23, 2002

Donald L. Storm
Donald L. Storm
Patent Examiner
Art Unit 2654